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Printed Pages : 2 ECS-603

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 2476 Roll No. | | | | | | | | | | |

B.Tech.

(SEMESTER-VI) THEORY EXAMINATION, 2012-13

COMPILER DESIGN

Time : 3 Hours] *[Total Marks : 100*

Section – A

1. Attempt **all** question parts : **10 × 2 = 20**

(a) Differentiate between dynamic loaders and linkers.

(b) Give the parse tree for the statement a = b * c + 60.

(c) What is bootstrapping a compiler ?

(d) What are rational preprocessors ?

(e) Explain proper prefix, proper suffix and proper substring with examples.

(f) Draw the transition diagram for identifiers.

(g) What is the need for separating the parser from scanner ?

(h) Describe language denoted by the following regular expression : (1 + 0)*.

(i) What are the code optimization techniques ?

(j) What are Synthesized and Inherited Attributes ?

Section – B

2. Attempt any **three** question parts : **10 × 3 = 30**

(a) Write the algorithm for moving forward pointer in "input buffering" scheme.

(b) What are the lexical-error recovery actions ?

(c) What is the use of intermediate code during compilation ?

(d) Write role of flow of control statement.

(e) Explain the process of translating an assignment statement.

Section – C

Attempt **all** question. **10 × 5 = 50**

3. Attempt any **two** parts : **5 × 2 = 10**

   (a) What is Left Recursion ? Write the rules to eliminate left recursion.

   (b) How is scope information represented in symbol table ?

   (c) Explain Machine–Independent Optimization.

4. Attempt any **one** part : **10 × 1 = 10**

   (a) Show that the following grammar is unambiguous :

   $S \rightarrow aSb \mid bSa \mid b$

   For a string ***abbbaabbbaaab*** draw a parse tree.

   (b) What is the role of lexical analyzer ? Enumerate the issues handled by a lexical analyzer.

5. Attempt any **one** part : **10 × 1 = 10**

   (a) Define a Quadruple. How it is different from triples ? Convert the following expression into three address code and quadruple.

   S=(a + b)/(c – d)*(e + f)

   (b) Write the prefix and postfix expression for A = (20 + (–5) * 6 + 12). Also convert the expression "a or b and not c" into three address code.

6. Attempt any **one** part : **10 × 1 = 10**

   (a) What are the three storage allocation strategies ? Explain each in detail.

   (b) Construct DAG for the following expression (a + b) – (e – (c + d)).

7. Attempt any **two** parts : **5 × 2 = 10**

   (a) Explain the phases of the compiler in detail. Write down the output of each phase for the expression a = b * c + 50. Standard precedence for operators may be used.

   (b) Discuss the issues in a programming language design that affects the storage management.

   (c) Explain the concept of Global data-flow analysis.